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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/047,032

Filing Date: January 15, 2002

Appellant(s): GERRITS, ANDREAS JOHANNES

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**EXAMINER'S ANSWER**

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This is in response to the appeal brief filed 3/9/2006 appealing from the Office action mailed 10/20/2005.

**(1) Real Party in Interest**

A statement identifying the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-20 (i.e., arguments have been presented for claims 1-20), and claims 1-20 are currently pending in this application.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct (i.e., all the independent claims are described, although descriptions of dependent claims 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20 are missing).

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows (the claims indicated in bold were not included):

- A. Claims 1, 2, 4-6, 8-10, 12-14, 16-18, and **20** stand rejected under 35 U.S.C. 102(e) as being unpatentable over US Patent No. 6,137,915 to Chai et al.
- B. Claims 3, 7, **11**, 15, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chai in view of US Patent No. 5,384,793 to Zinser et al.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,137,915	CHAI	10-2000
5,384,793	ZINSER	1-1995

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 2, 4-6, 8-10, 12-14, 16-18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Chai (U.S. Patent 6,137,915), hereinafter referred to as Chai.

Regarding **claims 1, 5, 9, 13, and 17**, Chai discloses an apparatus and method for error concealment for hierarchical subband coding and decoding. Chai's system includes the following:

- a transmitter for transmitting an input signal to a receiver via a transmission channel (Fig. 2, item 250; col. 4, lines 14-22),
- the transmitter comprising a splitter for splitting up a single input signal on a single input line into at least first and second frequency band signals (Fig. 2, items 220<sub>1</sub>, 220<sub>2</sub>, ... 220<sub>n</sub>; col. 3, lines 28-35, lines 53-64, where the audio input is optional—"may include ..."),
- the transmitter further comprising a first encoder for encoding the first frequency band signal into a first encoded frequency band signal and a second encoder for

encoding the second frequency band signal into a second encoded frequency band signal (Fig. 2, abstract, subband coding; col. 3, lines 28-33, lines 53-64),

- the transmitter being arranged for transmitting the first and second encoded frequency band signals via the transmission channel to the receiver (Fig. 2, items 240 and 245),

- the receiver comprising a first decoder for decoding the first encoded frequency band signal into a first decoded frequency band signal and a second decoder for decoding the second encoded frequency band signal into a second decoded frequency band signal (Fig. 2, items 260, 270, and 290; col. 4, lines 14-21, elementary streams),

- the receiver further comprising a combiner for combining the first and second decoded frequency band signals into an output signal (Fig. 2, items 270, 275, 290, 295; col. 4, lines 14-22),

- the receiver further comprising reconstruction means for reconstructing the second decoded frequency band signal when the second decoded frequency band signal is not available, characterised in that the reconstruction means are arranged for reconstructing the second decoded frequency band signal from the first decoded frequency band signal (Fig. 5, col. 4, lines 30-42; col. 5, lines 9-27; corrupted subband HH<sub>2</sub> can be concealed by using uncorrupted coefficients ... from subbands LH<sub>2</sub> and HL<sub>2</sub>).

Regarding **claim 2, 6, 10, 14, and 18** Chai teaches everything claimed, as applied above (see claim 1). In addition, Chai teaches "that the reconstruction means

are arranged for reconstructing the second decoded frequency band signal from the first decoded frequency band signal by extending a bandwidth of the first decoded frequency band signal" (col. 5, lines 20-25; corrupted  $HH_2$  can be concealed by using uncorrupted coefficients ... from subbands  $LH_2$  and  $HL_2$  [extending the bandwidth]).

Regarding **claim 4, 8, 12, 16, and 20**, Chai teaches everything claimed, as applied above (see claim 1). In addition, Chai teaches "the first frequency band signal and the first encoded frequency band signal and the first decoded frequency band signal are signals having a low frequency band and in that the second frequency band signal and the second encoded frequency band signal and the second decoded frequency band signal are signals having a high frequency band" (Fig. 2, col. 3, lines 28-35; col. 4, lines 14-23, lines 31-42; e.g., LL is a low frequency band, HH is a high frequency band, etc).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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2. Claims 3, 7, 11, 15 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Chai in view of Zinser (U.S. Patent 5,384,793), hereinafter referred to as Zinser.

Regarding **claim 3, 7, 11, 15, and 19**, Chai teaches everything claimed, as applied above (see claim 1). As stated in the rejection of claim 1, Chai teaches that an adjacent subband can be used to repair a corrupted subband (col. 2, lines 9-27), but Chai does not specifically teach "that the reconstruction means are arranged for reconstructing a present frame of the second decoded frequency band signal from a present frame of the first decoded frequency band signal **and from a previous frame of the second decoded frequency band signal.**" However, the examiner contends that this concept was well known in the art, as taught by Zinser.

In the same field of endeavor, Zinser discloses an error protection method for dynamic bit allocation sub-band coding. Zinser teaches that energies from the previous frame can be combined with energies from the adjacent energies in the current frame for synthetic regeneration (col. 3, lines 8-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chai by specifically providing features, as taught by Zinser, because it is well known in the art at the time of invention for the purpose of obtaining a better estimate by interpolating with information time [previous] as well as frequency [adjacent subband].

**(10) Response to Argument**

The examiner would like to note that during the examination process it is typical to search for a reference that teaches all the limitations but in particular to search for a reference that teaches any aspects of the invention that are felt to be unique to the claimed invention. In this case, it was felt that the limitations describing the reconstruction of an unavailable decoded frequency band were the unique features (see in independent claims 1, 5, 9, 13 and 17, "reconstructing the second decoded frequency..."). As indicated in the above rejections (and never contested by the Appellants), Chai teaches these features. Chai also teaches the remaining limitations either explicitly or inherently (as indicated in the rejections and argued below). Furthermore, other art of record (Shikakura, U.S. Patent 5,600,374, see Office Action, 6/13/05, pg. 6) also teaches the early limitations (Shikakura, Fig. 1A (prior art) and Fig. 1B (prior art)), but without the "reconstruction" claimed in the current application. Finally, it should be noted that none of the current arguments advanced by the Appellants were presented until after the final action, although the art rejections have remained substantially unchanged (compare current arguments with REM 09/08/2005).

**Rejections of Claims 1, 2, 4-6, 1-10, 12-14, 16-18, and 20 under 35 U.S.C. 102(e).**

**Claim 1**

3. Appellants assert on page 11:

Since the packetizer is not an encoder within the meaning of Chai, any step of splitting of the input signal resulting in coefficients corresponding to separate bands clearly takes place at the encoder 220 of Chai (Col. 3, lines 28-44), and not prior to the encoders of Chai. Therefore, Chai fails to show a splitter for splitting up a single input signal on a single input line into at least first and second frequency band signals, a first encoder for encoding the first frequency band signal, and a second encoder for encoding the second frequency band signal, as recited in claim 1.

**(SPLITTING, ENCODING)** The title of Chai's patent is "Apparatus and Method for Error Concealment for Hierarchical Subband Coding and Decoding" where the examiner maintains that it is well-known in the art that the operation of subband encoding performs a necessary operation of splitting a signal into frequency bands (the *On-line Dictionary of Computing* defines "subband encoding" as "[a]n audio compression technique where the sound is split into frequency bands ... ", note, this definition alone teaches both the splitting and encoding during subband coding).

**(SEPARATE ENCODING)** Regarding the use of separate encoders, Chai teaches subband decomposition, encoding (e.g. generating subband decomposed coefficients; col. 3, lines 31-34, split and encoded, Fig. 2, using multiple encoders, items 220n), and packetization (col. 3, lines 31-33; col. 4, lines 30-53). Thus, Chai teaches the splitting of the input signal resulting in coefficients corresponding to separate bands where they are encoded and separately packetized. The use of separate encoding is further supported on the receiving side where it is stated that "[e]rror resilience is particularly important for packets containing hierarchically decomposed information, i.e., hierarchical subband decomposed coefficients" (col. 4, lines 31-40, n.b., the fact that the

packets contain subband decomposed coefficients, implies a previous splitting and separate encoding).

Thus Chai teaches the functions of splitting and separate encoding. The above arguments supporting these positions will hereinafter will be referred to as **SPLITTING**, and **SEPARATE ENCODING**.

4. The Appellant asserts in the second paragraph on page 13:

... Therefore, Chai fails to show a first decoder for decoding the first frequency band signal, and a second decoder for decoding the second frequency band signal, with a combiner for combining at least first and second decoded frequency band signals, as recited in claim 1.

**(SEPARATE DECODING)** Separate encoding (see **SEPARATE ENCODING**) implies corresponding decoders (or decoding functions) (i.e., if the transmitter splits, encodes and packetizes [based on subbands] it is necessary to decode a given packet based on its contents [subband], and thus separate decoders (or separate decoding functions). This logic is further supported by the subsequent recombination (packets into subbands: LL, LH, etc.) where Chai's recovery procedures require access to specific subband data (col. 4, line 31 through col. 5, line 33, i.e., at some point during decoding the subband information is accessible which implies separate decoding).

**(COMBINING)** As the Applicant states, Chai teaches that the outputs are video and audio signals (col. 4, lines 19-22). Since these signals were decomposed prior to transmission, to generate an output signal at the receiving end, a "recomposition" or combining operation would need to be performed.

Thus Chai teaches the functions of separate decoding and combining. The above arguments supporting these positions will hereinafter after be referred to as **SEPARATE DECODING and COMBINING.**

Claims 2 and 4

See arguments for claim 1.

Claim 5

See arguments for **SEPARATE DECODING and COMBINING.**

Claims 6 and 8

See arguments for claim 5.

Claim 9

See arguments for **SPLITTING, SEPARATE ENCODING, SEPARATE DECODING, and COMBINING.**

Claims 10 and 12

See arguments for claim 9.

Claim 13

See arguments for **SEPARATE DECODING and COMBINING.**

Claims 14 and 16

See arguments for claim 13.

Claim 17

See arguments for **SEPARATE DECODING and COMBINING.**

Claims 18 and 20

See arguments for claim 17.

**Claims 3, 7, 11, 15, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chai in view of Zinser.**

**Claim 3**

5. Appellant asserts on page 25:

Accordingly, Appellant incorporates hereafter the arguments presented above against the rejection of Claim I under 35 U.S.C. §102(e) over Chai, and submits that Claim 3 is allowable for at least the same reasons that base Claim I is allowable. In particular, Appellant submits that Chai does not teach a splitter for splitting up a single input signal on a single input line into at least first and second frequency band signals, a first encoder for encoding the first frequency band signal, and a second encoder-for encoding the second frequency band signal, as recited in claim I. Further, Chai fails to show a combiner for combining the first and second decoded frequency band signals, as recited in claim 1, where the first and second decoded frequency band signals are generated by separate decoders, as claimed in base claim I.

See arguments for claim 1, **SPLITTING, SEPARATE ENCODING, SEPARATE DECODING, and COMBINING.**

**Claim 7**

See arguments for claim 5, **SEPARATE DECODING, COMBINING**

**Claim 11**

See arguments for claim 9, **SEPARATE DECODING, COMBINING.**

**Claim 15**

See arguments for claim 13, **SEPARATE DECODING, COMBINING.**

**Claim 19**

See arguments for claim 17, **SEPARATE DECODING, COMBINING.**

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**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

V. Paul Harper  
April 13, 2006



Conferees

David Hudspeth   
Richemond Dorvil   
V. Paul Harper